Understanding Injury Prevention

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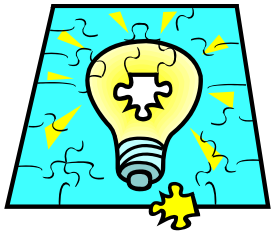
Whose problem is injury?

We do not learn from experience... we learn from reflecting on experience.

- John Dewey

Feedback & Discussion



Identifying a Problem is Important

..but it is only useful for improving the public's health if this initiates careful, considered actions and responses.

The 3 P's of PREVENTION

Passion

Possibilities

?

The Problem is Seldom "Obvious"

- How did this event happen?
- What do we know?
- What have we assumed?
- What must be done to "fix" it?
- How can we accomplish this?
  - Without unintended risk

The 3 P's of PREVENTION

Passion

Possibilities

Problem Solving

Public Health Problem Solving Process

1. Problem identification.
2. Problem measurement and definition.
3. Identification of key determinants.
4. Identification of candidate control strategies; intervention selection.
5. Intervention (includes policy) planning
6. Intervention implementation.
7. Evaluation - plus response to findings
8. Developing a communication strategy

Adapted from: Guyer, B. in Armenian and Shapiro, 1998

Problem Definition

Is one of the most difficult, most frustrating, and most important things you will do when addressing an injury problem.

"Our goal is to reduce (your interest area)-related injuries in North Dakota"

- In all of ND?
- What group?
- What general locale?
- What environments?
- What circumstances?
- What severity?
- What injury consequences?

An "anything is better than nothing" approach to injury prevention ..

.. creates the risk that non-strategic interventions will be implemented in the community with negative consequences for all injury prevention and control initiatives.

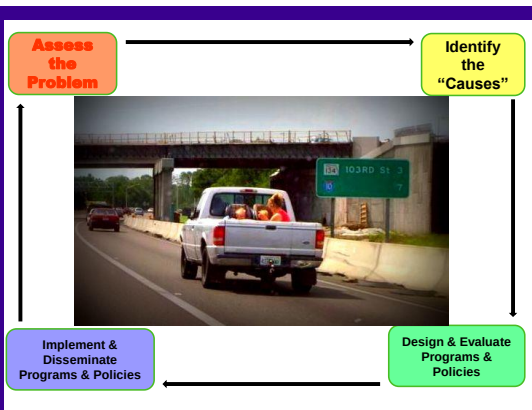
Mission Critical – **Informed** Beginnings

If the first button of one's coat is wrongly buttoned, all the rest will be crooked.

Giordano Bruno (1548-1600)

Key Concept

If we do not start out with a clear and focused problem definition, the intervention program **will** get into trouble.



Injury Problem Measurement

Is this a public health problem?

Why?

Why is this injury a problem?

- Magnitude of problem
  - Incidence
  - Prevalence
  - Major changes in trends
- Severity of the injury
- Consequences of injury
- Involves a vulnerable group
- Costs
- "Preventability"
- Community concern

Can and **should we** allocate resources to this problem?

1. Problem Identification ✓
2. Problem Definition & Measurement ✓
3. Identify Key Determinants

What is Prevention?

What is Prevention?

ACTIVELY making something unhealthy or harmful NOT happen
- Example ?

ACTIVELY making something healthy or protective happen
- Example ?

If we want to:

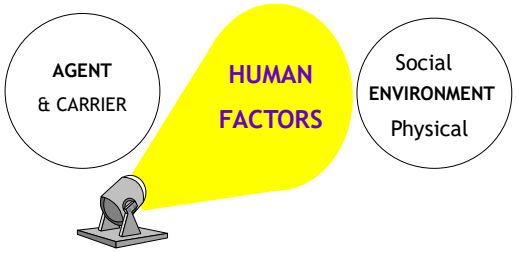
ACTIVELY make something unhealthy or harmful NOT happen
- What must we understand?

ACTIVELY make something healthy or protective happen
- What must we understand?

Data Gathering & Analysis ...

.. provides the foundation for strategic intervention development

What We See Is Determined by Where and How We Look



Review: What Injures?

What is the **Agent** of physical injury?

The Agent of Injury is Energy

Injury is an (acute) exposure to physical agents such as mechanical energy, heat, electricity, chemicals, and ionizing radiation interacting with the body in amounts or at rates that exceed the threshold of human tolerance. In some cases, injuries result from the sudden lack of essential agents such as oxygen or heat.

WHO definition derived from Gibson and Haddon

HUMAN AGENT and ENVIRONMENTAL factors interact to produce an injury and its outcome.

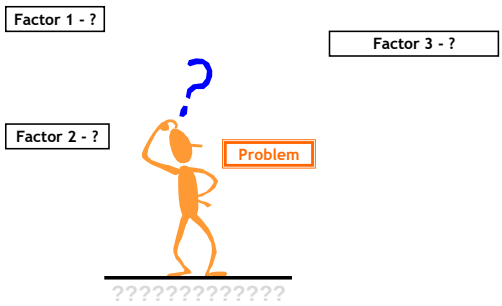
IDENTIFYING these factors and ASSESSING their importance is crucial to the development of effective prevention strategies

Information about the injury is not enough …

- A good problem diagnosis usually requires the use of data from several sources.



Using conceptual frameworks to avoid narrow focus & diagnostic error

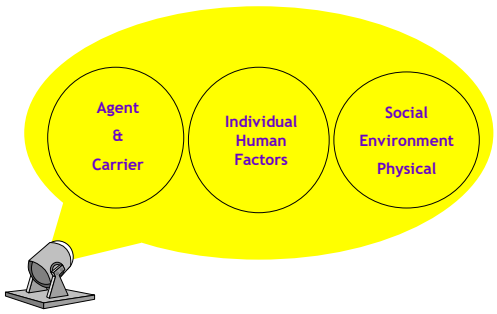


A Pioneer: William (Bill) Haddon, Jr., MD

- First "Highway Safety Chief"
  - National Highway Traffic Safety Administration
- Headed Insurance Institute for Highway Safety
- Developed a Framework for Understanding Key Determinants of Injury: The "Haddon Matrix" (1972)


Dr. Bill Haddon, 1926-1985

Bill Haddon was determined to expand our field of vision



The Haddon Factors

- Human (individual) factors
  - NOT only behavioral
- Agent & Carrier (vector) factors
- Environmental factors
  - physical and social

The Haddon Phase-Factor Matrix

Factors

HUMAN (Individual level)	AGENT & Carrier	ENVIRONMENT	
		Physical	Social

Phases of Injury Prevention & Control

1. Reducing the number of events with the potential to cause injury.
2. Reducing the number, and primary severity, of injuries that occur.
3. Reducing the final severity of injury and optimizing outcome.

The Haddon Matrix

- Allows us to examine injury as a dynamic event.
- The phase-factor matrix has 3 distinct phases:
  - pre-event
  - event
  - post-event

	Human	Agent & Carrier	Environment	
			Physical	Social
Pre-Event	Will an event - with the potential to cause injury - occur?			
Event				
Post-Event				

	Human	Agent & Carrier	Environment Physical	Environment Social
Pre-Event				
Event	Will an injury occur? What will the primary severity be?			
Post-Event				

	Human	Agent & Carrier	Environment Physical	Environment Social
Pre-Event				
Event				
Post-Event	What will the outcome be?			

Haddon Phase-Factor Matrix QUESTIONS

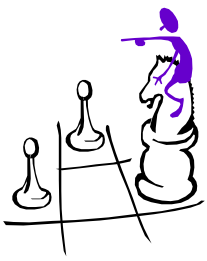
	Human	Agent & Carrier	Environment Physical	Environment Social
Pre-Event	Will an event - with the potential to cause injury - occur?			
Event	Will an injury occur? What will the primary severity be?			
Post-Event	What will the outcome be?			

The Value of the Haddon Phase-Factor Matrix

- It makes us aware of the multiple etiological factors that are present.
- It can help us make a comprehensive diagnosis.

Child Pedestrian Injury	Human (Individual)	Agent & Carrier	Environment	
			Physical	Social
Pre-Event	"Age", Size, Development, Behavior, Experience, Supervision,	Speed, Size, Braking & Maneuvering ability. Crash avoidance &/or distracting technology	Visibility, Congestion, Road Design, Surface	Driver licensing, distraction, etc. Traffic control, child care regs. & facilities, driver training and licensure
Event	Size, clothing, strike zone, (protective gear)	Force, direction & number of impacts	Impact surface(s), fixed objects, other vehicles	Road and environmental design policies; maintenance
Post-Event	Pre-existing conditions, EMS care & rehabilitation; reintegration support	Additional vehicle impacts; entrapment; fire	Urban/rural; proximity to medical care; weather, etc.	Provision of care; financial, legal & social resources

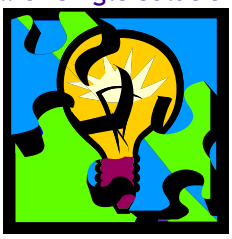
Haddon Matrix: next steps



Not all causal factors are **KEY DETERMINANTS**

- Which factors are controllable?
- Will changing these change the outcome?

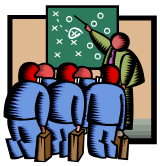
Problems seldom have a single cause … or single solution



Avoid "obvious" solution temptation

Intervention planning should not begin until:

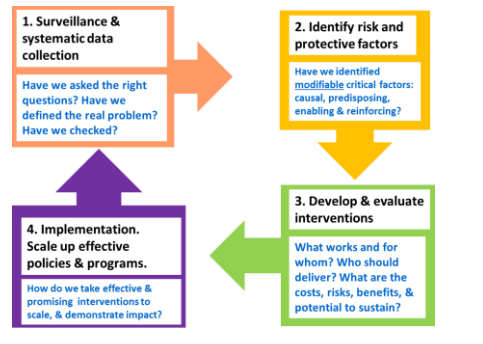
- the injury problem is well defined and described
- you have identified key causal and contextual factors
- you know what you are targeting - and why



Key Concept

Any intervention should be based on an underlying model of the causal or associated (pre-disposing, enabling, reinforcing) factors which contribute to the problem to be prevented.

This must be fully informed – **not assumed**.



This is so complicated – why bother?

An intervention will not be effective if:

- ❑ the underlying assumptions are wrong
- ❑ the program does not affect intervening variables
- ❑ the program/activity is not implemented adequately
- ❑ the program effects cannot be sustained

First, Do No Harm

Child Pedestrian Injury	Human (Individual)	Agent & Carrier	Environment	
			Physical	Social
Pre-Event	"Age", Size, Development, **Behavior**, Experience, Supervision,	Speed, Size, Braking & Maneuvering ability. Crash avoidance &/or distracting technology	Visibility, Congestion, Road Design, Surface	Driver licensing, distraction, etc. Traffic control, child care regs. & facilities, driver training and licensure
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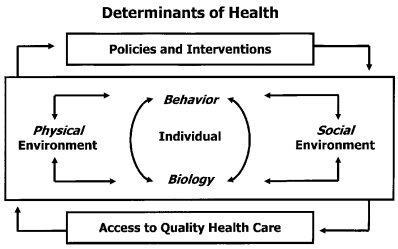
Children must be protected within their environment, not isolated from it.

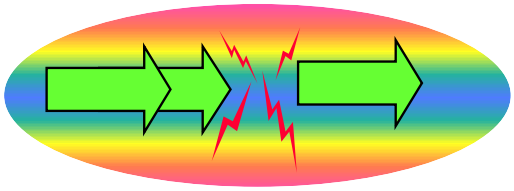
Public health is: "What we, as a society, do collectively to assure the conditions in which people can be [safe] and healthy"

Institute of Medicine. (1988).The Future of Public Health. Washington, DC: National Academy Press, p. 41.

We cannot ignore the many determinants of safety & health



Community context is everything: "ignore it at your peril"



Strategic intervention planning requires that we understand the causal chain **AND the factors that support or inhibit it.**

Understanding Environmental Context

- The Haddon Matrix does not work very well for complex injury issues (e.g., alcohol-related injury; suicide risk reduction, lack of willingness to screen for IPV, etc.)
- The *Phased Environmental Influences Matrix** helps us understand the context in which this problem developed and how it may be changed. It is designed to show us what we don't know we don't know.

** Working title*

Daniel Boorstin

"The greatest obstacle to discovery is not ignorance - it is the illusion of knowledge"

Phased Environmental Influences Matrix ◦

State Issue Being Analyzed Here:		Environmental Contextual Factors						
		Physical & Built Environment	Identified Levels of Social Environmental Influences* Defined by user; may range from individual-level to multi-national					
			Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Historic Phase Factors								
Current Phase Factors								
Future Phase Factors								

Phased Environmental Influences Matrix ◦

State Issue Being Analyzed Here:		Environmental Contextual Factors						
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			Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Historic Phase Factors								
Current Phase Factors	State current issue							
Future Phase Factors								

Who influences this "story"?

Phased Environmental Influences Matrix ◦

State Issue Being Analyzed Here:		Environmental Contextual Factors					
		Physical & Built Environment	Identified Levels of Social Environmental Influences* Defined by user; may range from individual-level to multi-national				
			Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Historic Phase Factors		How did we get to the current situation? What is the history of this problem? Is there a history of previous attempts to address this or similar problems? Don't assume there's no historical baggage!						
Current Phase Factors	State current issue	What are the factors influencing the status quo? Which are modifiable? Don't assume there's consensus about the need to change. Who benefits from preserving the status quo?						
Future Phase Factors		What are the factors influencing sustainability of this intervention/policy? What can we do in the current phase to anticipate and plan for opposing forces and challenges to the intervention/policy?						

MY FINAL QUESTION:

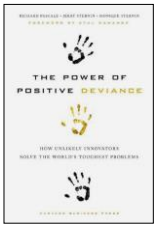
Are the questions you're asking now helping you achieve or enhance your program's impact?

A new perspective may transform both our questions and our results

Photos: Wikimedia Images (labeled as public domain)

Jerry Sternin

Learn from the positive deviants!



www.positivedeviance.org

"Positive Deviance is based on the observation that in every community there are **certain individuals or groups whose uncommon behaviors and strategies enable them to find better solutions to problems than their peers, while having access to the same resources and facing similar or worse challenges.**

The Positive Deviance approach is an asset-based, problem-solving, and community-driven approach that enables the community to discover these successful behaviors and strategies and develop a plan of action to promote their adoption by all concerned."

Source: The Positive Deviance Initiative

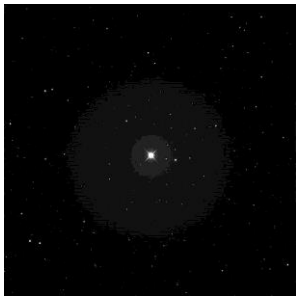
Learning to Avoid T.B.U. Temptation in our Questioning

- "True but useless"
- Conventional Wisdom is Neither!

One questioning strategy provides the foundation for EVERY effective positive deviance change initiative

The Somersault Question

Shifting from Scarcity to Bright Spot Questions



Photograph by Kevin Heider (2009)

- Find your bright spots
- Learn about them
- "Amplify positive deviance"

"We are all faced with a series of great opportunities brilliantly disguised as impossible situations."

Charles R. Swindoll

Tree of Life (Stained Glass) Artist: Naomi Maddux

What would you attempt in North Dakota if you knew that, collectively, you had the strengths needed to create a safe and healthy community in which people could thrive?

For:

- Being part of this prevention community
- Caring enough to be here
- Sharing your insights & expertise
- Being willing to change your questions, and helping others change theirs.

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